

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) An inductively coupled plasma (ICP) generating apparatus comprising:

an evacuated reaction chamber;

an antenna installed at an upper portion of the reaction chamber to induce an electric field for ionizing reaction gas supplied into the reaction chamber and generating plasma; and

[[an]] a radio frequency (RF) power source connected to the antenna to apply radio frequency power to the antenna,

wherein the antenna comprises a plurality of coils ~~having different radiuses, at least one of the coils being a~~ comprising a first continuous serpentine coil and a second continuous circular coil, wherein the serpentine coil is bent in a zigzag pattern and surrounds the circular coil.

2. (Currently Amended) The inductively coupled plasma generating apparatus of claim 1, wherein the ~~antenna comprises a~~ circular coil is arranged at a center portion of the antenna and [[a]] the serpentine coil is arranged around and connected to the circular coil.

3. (Original) The inductively coupled plasma generating apparatus of claim 2, wherein the circular coil has a relatively small radius to reduce the area of opposing portions between the circular coil and the serpentine coil.

4. (Cancelled)

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Original) The inductively coupled plasma generating apparatus of claim 1, wherein the serpentine coil has a zigzag pattern with equally spaced several sections.

10. (Original) The inductively coupled plasma generating apparatus of claim 9, wherein the serpentine coil has a plurality of outer portions extending along the circumference and a plurality of inner portions bent toward the center portion.

11. (Original) The inductively coupled plasma generating apparatus of claim 10, wherein the inner and outer portions of the serpentine coil are arranged to correspond to center and edge portions of the reaction chamber, respectively.

12. (Currently Amended) The inductively coupled plasma generating apparatus of claim 1, wherein the plurality of coils ~~are connected by~~ further comprise at least one connection coil, wherein the connection coil ~~coils that are placed high above a plane where~~ connects the serpentine coil and the circular coil of the plurality of coils are arranged.

13. (Currently Amended) The inductively coupled plasma generating apparatus of claim 1, wherein ~~each of the~~ serpentine coil's zigzag pattern ~~coils~~ has a rectangular cross-section having a width smaller than height.

14. (Currently Amended) The inductively coupled plasma generating apparatus of claim 1, wherein ~~each of the~~ circular coil ~~coils~~ has a continuous circular cross-section.

15. (Original) The inductively coupled plasma generating apparatus of claim 1, further comprising a plurality of permanent magnets arranged around the outer wall of the reaction chamber.

16. (Original) The inductively coupled plasma generating apparatus of claim 15, wherein the plurality of permanent magnets are arranged around the outer wall of the reaction chamber such that their N and S poles alternate.

17. (Original) The inductively coupled plasma generating apparatus of claim 15, wherein the plurality of permanent magnets are arranged at a region where the magnitude of a magnetic field generated by the antenna is relatively weak.

18. (Original) The inductively coupled plasma generating apparatus of claim 15, wherein the plurality of permanent magnets are arranged such that they can revolve simultaneously about a central axis of the reaction chamber to shift their positions according to the distribution of the magnetic field generated by the antenna.

19. (Original) The inductively coupled plasma generating apparatus of claim 1, further comprising:

a matching network connected between the radio frequency power source and the antenna; and

a capacitor connected between the matching network and the antenna, in parallel with the antenna.

20. (Original) The inductively coupled plasma generating apparatus of claim 19, wherein the plurality of coils of the antenna are connected in series to the radio frequency power source.

21. (Original) The inductively coupled plasma generating apparatus of claim 19, wherein at least one of the coils of the antenna is connected in parallel to the radio frequency power source.

22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

25. (New) The inductively coupled plasma generating apparatus of claim 1, wherein the serpentine coil and the circular coil are separate coils, and further comprising a connection coil that communicatively connects the serpentine coil to the circular coil.

26. (New) The inductively coupled plasma generating apparatus of claim 1, wherein the serpentine coil and the circular coil are physically connected to each other.

27. (New) The inductively coupled plasma generating apparatus of claim 1, wherein the serpentine continuous first portion is connected to the RF power source at the end away from the circular continuous second portion, and wherein the

circular continuous second portion is connected to ground at the end away from the serpentine continuous first portion.

28. (New) An inductively coupled plasma (ICP) generating apparatus comprising:

an evacuated reaction chamber;

an antenna installed at an upper portion of the reaction chamber to induce an electric field for ionizing reaction gas supplied into the reaction chamber and generating plasma; and

a radio frequency (RF) power source connected to the antenna to apply radio frequency power to the antenna,

wherein the antenna comprises a coil comprising a serpentine continuous first portion and a separate circular continuous second portion connected end to end to one another.

29. (New) The inductively coupled plasma generating apparatus of claim 28, wherein the circular continuous second portion is arranged at a center portion of the antenna and the serpentine coil is arranged around and connected to the circular continuous second portion.

30. (New) The inductively coupled plasma generating apparatus of claim 28, wherein the serpentine continuous first portion is connected to the RF power source at an end region away from the circular continuous second portion, and

wherein the circular continuous second portion is connected to ground at an end region away from the serpentine continuous first portion.

31. (New) The inductively coupled plasma generating apparatus of claim 28, wherein the serpentine coil and the circular continuous second portion are separate coils, and further comprising a connection coil that communicatively connects the serpentine coil to the circular continuous second portion.

32. (New) An inductively coupled plasma (ICP) generating apparatus comprising:

- an evacuated reaction chamber;

- an antenna installed at an upper portion of the reaction chamber to induce an electric field for ionizing reaction gas supplied into the reaction chamber and generating plasma; and

- a radio frequency (RF) power source connected to the antenna to apply radio frequency power to the antenna,

- wherein the antenna comprises three coils:

- a first center, circular coil;

- a second coil surrounding the first coil; and

- a third coil communicatively connecting the first coil to the second coil;

- wherein the second coil has inner portions complementary to the outer surface of the first coil, outer portions complementary to the inner surface of the reaction chamber and connecting portions connecting the inner portions and the outer portions.